

Amendments to the Claims

Please amend claims 1, 5, 7, 10, 17 and 21, all as shown below. Applicant reserves the right to prosecute any originally presented claims in a continuing or future application. All currently pending claims in the Application are reproduced below, including those that remain unchanged by this Response.

1. (Currently Amended) A method of making a synthesis plan for use in mixed signal circuit synthesis, comprising the steps of:

developing a mixed signal synthesis library, said mixed signal synthesis library including simulation models specified in a mixed signal synthesis language that represent digital and analog library functions parameterized to a users performance specifications, characteristic functions of design parameters, test harnesses, and netlists of mixed-signal functions parameterized for sizing to achieve a user's performance specifications; and

developing a mixed signal synthesis plan for use with said mixed signal synthesis library, comprising the substeps of

determining a circuit comprising at least one set of circuit ~~elements;~~ elements,
identifying a set of parameters for construction of said circuit ~~elements;~~ elements,
simulating operation of said circuit at a set of points, each point defined by varying at least one of said ~~parameters;~~ parameters,

consolidating results from the simulation ~~operation;~~ operation, and
storing the consolidated results of said simulation in a behavioral model of said ~~plan~~ plan;

wherein the mixed signal synthesis plan can be subsequently executed to invoke a synthesis toolset upon the library in a particular sequence to synthesize a circuit.

2. (Original) The method according to Claim 1, wherein said step of consolidating comprises the step of placing the results of said simulation in a tabular form that correlates each of said set of points to a corresponding result of said simulation.

3. (Original) The method according to Claim 1, wherein said step of storing comprises the steps of:

fitting a polynomial equation to results corresponding to at least two of said set of points; and
storing the polynomial equation in a behavioral model of said plan.

4. (Previously Presented) The method according to Claim 1, wherein said circuit elements comprise at least one analog component.

5. (Currently Amended) A method of mixed signal circuit ~~simulation~~ synthesis, comprising the steps of:

accessing a mixed signal synthesis library, said mixed signal synthesis library including simulation models specified in a mixed signal synthesis language that represent digital and analog library functions parameterized to a users performance specifications, characteristic functions of design parameters, test harnesses, and netlists of mixed-signal functions parameterized for sizing to achieve a user's performance specifications;

creating one or more plans for use in circuit synthesis, each plan being created by
determining a circuit comprising at least one set of circuit elements,
identifying a set of parameters for construction of said circuit elements,
simulating operation of said circuit at a set of points, each point defined by varying
at least one of said parameters,

consolidating results from the simulation operation, and[[,]]

storing the consolidated results of said simulation in a behavioral model of said plan;

selecting a plan for a circuit to be designed;

providing the selected plan and a set of performance requirements to a synthesis engine;

executing the plan to invoke a mixed signal synthesis toolset upon the mixed signal synthesis library in a particular sequence to synthesize a circuit; and

retrieving results of the executed plan.

6. (Original) The method according to Claim 5, wherein said results comprise at least one of a sized netlist, a datasheet, and a simulation script for verification of the circuit designed.

7. (Currently Amended) A method of behavioral circuit design optimization, comprising the steps of:

accessing a mixed signal synthesis library, said mixed signal synthesis library including simulation models specified in a mixed signal synthesis language that represent digital and analog library functions parameterized to a users performance specifications, characteristic functions of design parameters, test harnesses, and netlists of mixed-signal functions parameterized for sizing to achieve a user's performance specifications;

determining a circuit comprising at least one set of circuit elements;
identifying a set of parameters for construction of said circuit elements;
simulating operation of said circuit at a set of points, each point defined by varying at least one of said parameters;
fitting a polynomial curve to a result of the circuit simulation at each of said set of points; and
selecting a set of said circuit parameters for an optimized circuit based on said polynomial curve.

8. (Original) The method according to Claim 7, wherein:
said step of simulating comprises the steps of:
setting each of a subset of said parameters to a fixed value;
setting at least one remaining parameter of said set of parameters;
simulating operation of said circuit to produce a result;
varying said at least one remaining parameter of said set of parameters; and
repeating said steps of varying and simulating for a predetermined number of iterations.

9. (Original) The method according to Claim 7, further comprising the steps of:
repeating said steps of simulating and fitting to produce plural data point sets of simulation results; and

wherein said step of selecting comprises the step of selecting an optimized circuit solution from the plural data point sets.

10. (Currently Amended) A mixed signal synthesizer, comprising:

a synthesis engine configured to determine an optimized circuit using mixed signal synthesis and produce a sized netlist based on a plan having a circuit design and parameters for optimizing the circuit;

a mixed signal synthesis library, said mixed signal synthesis library including simulation models specified in a mixed signal synthesis language that represent digital and analog library functions parameterized to a users performance specifications, characteristic functions of design parameters, test harnesses, and netlists of mixed-signal functions parameterized for sizing to achieve a user's performance specifications;

a synthesis plan library having a set of synthesis plans for at least one circuit, each synthesis plan having a circuit design and a set of parameterized values regarding any of physical characteristics and values of circuit elements, said synthesis plan being created by

determining a circuit comprising at least one set of circuit elements,

identifying a set of parameters for construction of said circuit elements,

simulating operation of said circuit at a set of points, each point defined by varying at least one of said parameters,

consolidating results from the simulation operation, and,

storing the consolidated results of said simulation in a behavioral model of said plan;

and[.],

a user interface configured to allow a user to select a synthesis plan from the library and input the plan and a set of at least one performance characteristic to said synthesis engine, for use by said synthesis engine in synthesizing a circuit.

11. (Canceled).

12. (Previously Presented) The mixed signal synthesizer according to Claim 10, wherein each synthesis plan includes at least one of a non-sized netlist, a topology, a synthesis model, a test script, a test harness, a cell definition, a cell model, a starting point table, and a characterization plan for said at least one circuit.
13. (Previously Presented) The mixed signal synthesizer according to Claim 10, further comprising:
a synthesis toolset having tools selectable for use by said synthesis engine.
14. (Original) The mixed signal synthesizer according to Claim 13, wherein said tools comprise at least one of an optimizer, a simulator, a characterizer, and a parasitic calculator.
15. (Previously Presented) The method according to Claim 2, wherein said circuit elements comprise at least one analog component.
16. (Previously Presented) The method according to Claim 3, wherein said circuit elements comprise at least one analog component.
17. (Currently Amended) A system for mixed signal circuit synthesis comprising:
a user interface for designing a circuit, wherein said circuit comprises a plurality of circuit elements;
a simulator that simulates the operation of said circuit at a set of points, each of said set of points defined by varying at least one of a plurality of design parameters associated with said circuit elements;
a mixed signal synthesis library, said mixed signal synthesis library including simulation models specified in a mixed signal synthesis language that represent digital and analog library functions parameterized to a users performance specifications, characteristic functions of design parameters, test harnesses, and netlists of mixed-signal functions parameterized for sizing to achieve a user's performance specifications;

a plurality of synthesis plans that store the consolidated results of said simulations in behavioral models; and[[,]]

a user interface that allows a user to select and use any of said synthesis plans with said mixed signal synthesis library for mixed signal circuit synthesis.

18. (Previously Presented) The system according to Claim 17, wherein said consolidated results include the results of said simulation stored in a tabular form that correlates each of said set of points to a corresponding result of said simulation.

19. (Previously Presented) The system according to Claim 17, wherein said plan includes a polynomial equation fitted to results corresponding to at least two of said set of points; and the polynomial equation in a behavioral model of said plan.

20. (Previously Presented) The system according to Claim 17, wherein said circuit elements comprise at least one analog component.

21. (Currently Amended) A method for mixed signal circuit synthesis comprising the steps of:
providing a mixed signal synthesis library, said mixed signal synthesis library including simulation models specified in a mixed signal synthesis language that represent digital and analog library functions parameterized to a users performance specifications, characteristic functions of design parameters, test harnesses, and netlists of mixed-signal functions parameterized for sizing to achieve a user's performance specifications;

allowing a user to construct a circuit comprising at least one set of circuit elements;

identifying a set of parameters for construction of said circuit elements;

simulating operation of said circuit at a set of points, each point defined by varying at least one of said parameters;

consolidating the results from the simulation operation;

storing the consolidated results of said simulation in a behavioral model of a synthesis plan;

and[[,]]

selecting and using said synthesis plan with said mixed signal synthesis library for synthesis of ~~mixed-signal~~ circuits.

22. (Previously Presented) The method according to Claim 21, wherein said step of consolidating comprises the step of placing the results of said simulation in a tabular form that correlates each of said set of points to a corresponding result of said simulation.

23. (Previously Presented) The method according to Claim 21, wherein said step of storing comprises the steps of: fitting a polynomial equation to results corresponding to at least two of said set of points; and, storing the polynomial equation in a behavioral model of said plan.

24. (Previously Presented) The method according to Claim 21, wherein said circuit elements comprise at least one analog component.